

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
28 April 2005 (28.04.2005)

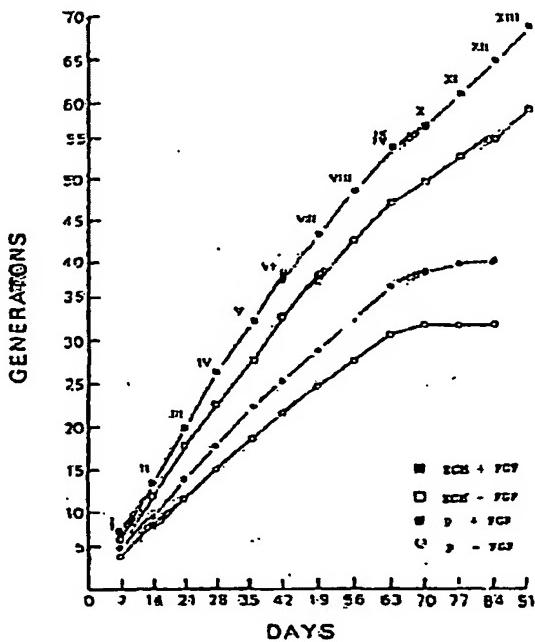
PCT

(10) International Publication Number
WO 2005/037144 A2

- (51) International Patent Classification⁷: **A61F 2/14**
- (21) International Application Number: **PCT/US2004/032934**
- (22) International Filing Date: 7 October 2004 (07.10.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
- | | | |
|------------|------------------------------|----|
| 60/510,359 | 10 October 2003 (10.10.2003) | US |
| 60/510,349 | 10 October 2003 (10.10.2003) | US |
| 60/510,350 | 10 October 2003 (10.10.2003) | US |
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

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(54) Title: METHODS AND COMPOSITIONS FOR GROWING CORNEAL ENDOTHELIAL AND RELATED CELLS ON BIOPOLYMERS AND CREATION OF ARTIFICIAL CORNEAL TRANSPLANTS



(57) Abstract: This invention discloses methods to attach and grow a monolayer of cultured human corneal endothelial cells onto the endothelial side of the stroma synthesized from biopolymer to generate a more bio-equivalent artificial cornea. The approaches will include the use of attachment and growth-promoting agents such as fibronectin, laminin, RGDS, collagen type IV, bFGF conjugated with polycarophil, and EGF conjugated with polycarophil. The patent also describes a method to create a self-sustaining polymer containing adhesive molecules and growth factors to support the attachment and proliferation of cultured human corneal endothelial cells for corneal transplantation either as a half thickness device or full-thickness button replacement. An approach for the implantation of cultured retinal pigment epithelial (RPE) cells into the sub-retinal space for treatment of age-related macular degeneration (AMD) is disclosed in this invention. This method will enable the delivery of the transplanted RPE in a sheet of monolayer cells and will be better suited to perform their physiological function.